

Date: Tuesday, 08/04/2008 4:57:57 PM  
 User: Julie Lecoq

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 350/355 AS X-TUBE FWD  
 Job Number : 38490  
 Estimate Number : 12485  
 P.O. Number :  
 This Issue : 08/04/2008 S.O. No. :  
 Prsht Rev. : NC Part Number : D350748101  
 First Issue : / / Type : LANDING GEAR Drawing Number : N/A  
 Previous Run : 35731 Drawing Revision : B *08/06/24*  
 Material :  
 Due Date : 30/06/2008 Qty: 1 Um: Each  
 Written By :  
 Checked & Approved By : *JD 08.4.09*  
 Comment : Est Rev:A New Issue 06-07-05 JLM  
 Est Rev:B Update qty of MS21042L5 06-09-12 KJ  
 Est Rev:C Rev B 07-11-15 DD  
 Est Rev D Combined manufacturing 08.04.02 EC verified by:  
 DD

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



*JD 08.4.23*



Comment: Photocopy bluefile & type labels per PPPD350-748-101. CHG001 *08/06/24*

2.0 D350748141TRN CROSTUBE TURNING DETAIL



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

CROSTUBE TURNING DETAIL

batch *342422*

*DP 8-10-2*

3.0 BENDING BENDING MACHINE - SKIDTUBES



Comment: BENDING MACHINE

Bend tube as per Dwg D350-748-141 using CNC bender program D350F and Folio FT *DP 8-10-3*

4.0 QC15 DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES *08.10.03*

5.0 CROSTUBES CROSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill Tube as per Dwg D350-748-141 Using DT8876 A,B & C Drill Jigs,  
 Set-up drill table as per QSI 010

2-Deburr *08-10-06*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Job Number: 38490

Part Number: D350748101

Job Number:



Seq. #: Machine Or Operation:

Description :

3-Engrave Part # and Batch # as per Dwg D350-748-141 RT 08-10-06

4-Remove all marks from tube within limits of D350-748-141

AWM 8-10-06

5- Apply a light coat of LPS3 on the interior of tube

Batch: 107912 RT 08-10-07

6.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

CHECK 10 DEG HOLES WITH DT8876E(EUROCOPTER CLAMP)

808/10/07 @

7.0

OUTSIDE SERV.10

OUTSIDE SERVICES -skids



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: 7326

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possible Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

C 208/10/07  
①

8.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

208/10/07  
①

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

508/10/22 @

10.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

2-Prime Outside of Tube as per Dart QSI 005 4.2

RT 08 10 22

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Drawing Name: 350/355 AS X-TUBE FWD

Job Number: 38490

Part Number: D350748101

Job Number:



Seq. #:	Machine Or Operation:	Description :
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11.0	QC14	INSPECT SPRAY PAINT
------	------	---------------------



08-10-23 (1)

Comment: Inspect Spray Paint  
Then, Wrap in plastic bag to protect from scratches

12.0	D35021	SUPPORT
------	--------	---------



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

SUPPORT

Batch: 35783

RT 08-10-23

13.0	D2856400	Abrasion Strip
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Comment: Qty.: 1.2401 f(s)/Unit Total: 1.2401 f(s)

Abrasion Strip 7.10" long x2

Batch: 37667

RT 08-10-23

14.0	ALS41032225	Insert
------	-------------	--------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Insert

Batch: 100621

RT 08-10-23

15.0	AN960JD10	Washer
------	-----------	--------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Washer

Batch: 109059

RT 08-10-23

16.0	MS2192020	Clamp (per MIL-DTL-8783C)
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Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: 107501

RT 08-10-23

17.0	MS27039110	Screw
------	------------	-------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Screw

Batch: 18836

RT 08-10-23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Job Number:



Seq. #:	Machine Or Operation:	Description :
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18.0	CROSSTUBES	CROSSTUBES RESOURCE 1
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Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire Insert, then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-141 & QSI 035.

3-Install supports Using D18876 as per Dwg D350-748-141, Torque to 60-80 IN-LBS

} 25  
08-10-23

19.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

5 08/10/24 (K)

20.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Pick Packing Kit

21.0	D35001	350 SADDLE
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

350 SADDLE

Batch: 41613

SS 08/10/24 (K)

22.0	D35011	BUSHING
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Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

BUSHING

Batch: B35316

SS 08/10/24 (K)

23.0	AN46A	Bolt
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Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Bolt

Batch: M08558

SS 08/10/24 (K)

24.0	AN441A	bolt
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Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

bolt

Batch: M100302

SS 08/10/24 (K)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Job Number: 38490

Part Number: D350748101

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

25.0	AN532A	Bolt
------	--------	------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)  
Bolt  
Batch: M109061

26.0	AN960JD416	Washer
------	------------	--------



Comment: Qty.: 32.0000 Each(s)/Unit Total : 32.0000 Each(s)  
Washer  
Batch: M108827

27.0	AN960JD516	Washer
------	------------	--------



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)  
Washer  
Batch: M109059

28.0	MS21042L4	Nut
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Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)  
Nut  
Batch: M08145

29.0	MS21042L5	Nut
------	-----------	-----



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)  
Nut  
Batch: M108827

30.0	QC4	INSPECT 100% KITS FOR COMPLETENESS
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Comment: INSPECT 100% KITS FOR COMPLETENESS

31.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1  
Identify and pack for shipping as per PPP D350-748-101  
Location: \_\_\_\_\_  
PPP Rev: \_\_\_\_\_ Rev B

SS 08/10/24 (X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Job Number: 38490

Part Number: D350748101

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

QC21

FINAL INSPECTION/W/O RELEASE



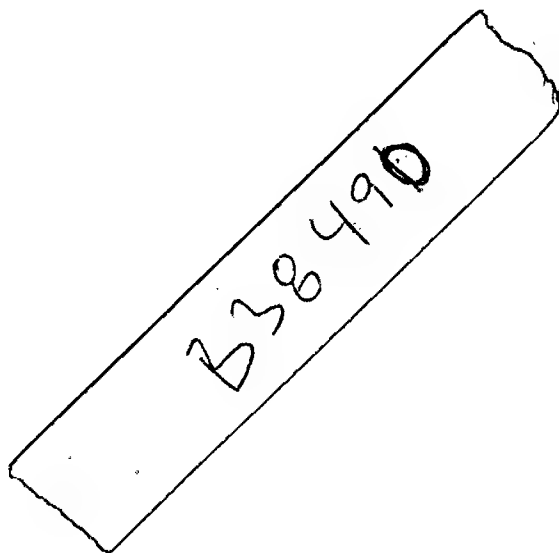
08/10/27

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mk 08-10-27



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

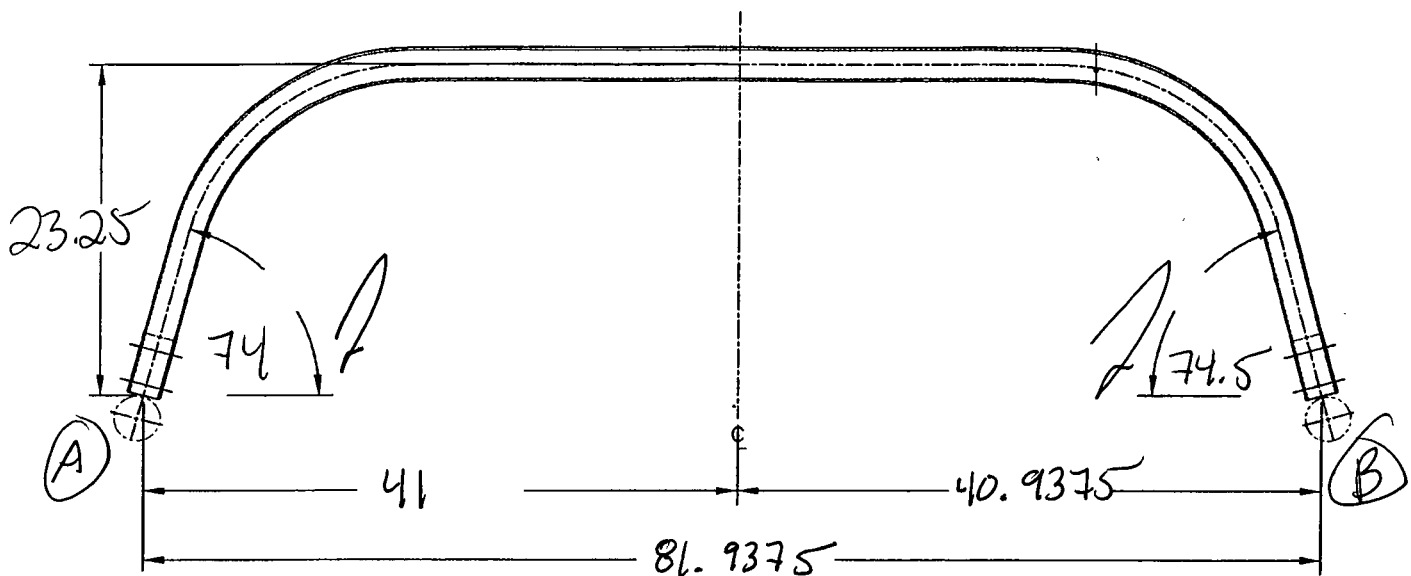
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NOTE: Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	38490
<b>Description:</b> Crosstube High Fwd (AS350/355)		<b>Part Number:</b>	D350-748-101
<b>Inspection Dwg:</b> D350-748-141 <b>Rev:</b> D		<b>Page 1 of 1</b>	

Required Dimension	Min	Max
Height	23.13	23.37
1/2 Span	40.78	41.02
Angle	75	77
Total Span	81.56	82.04



Comments
- Trim off 3/16 of C side B.

QC15 Inspection	
Date	08.10.03

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	



DESIGN <i>qp</i>	DRAWN BY <i>qp</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[initials]</i>	APPROVED <i>[initials]</i>	DRAWING NO. D350-748-141	REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI FWD)	SCALE NTS
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6017-115 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.	

RELEASED

06.10.31 *[initials]*

QTY	P/N	DESCRIPTION
X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
1	D6017-115	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

**D350-748-141 CROSSTUBE:**

- 1) MATERIAL: MANUFACTURED FROM D6017-115 OR D6015-125  
FINISHED LENGTH =  $110.27 \pm 0.06$
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR  $\varnothing 0.297$  HOLE.

**UNDER REVIEW**

07.07.16 *[initials]*

OUT FOR REVIEW  
OK 07.11.22

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**Dart Aerospace Ltd**

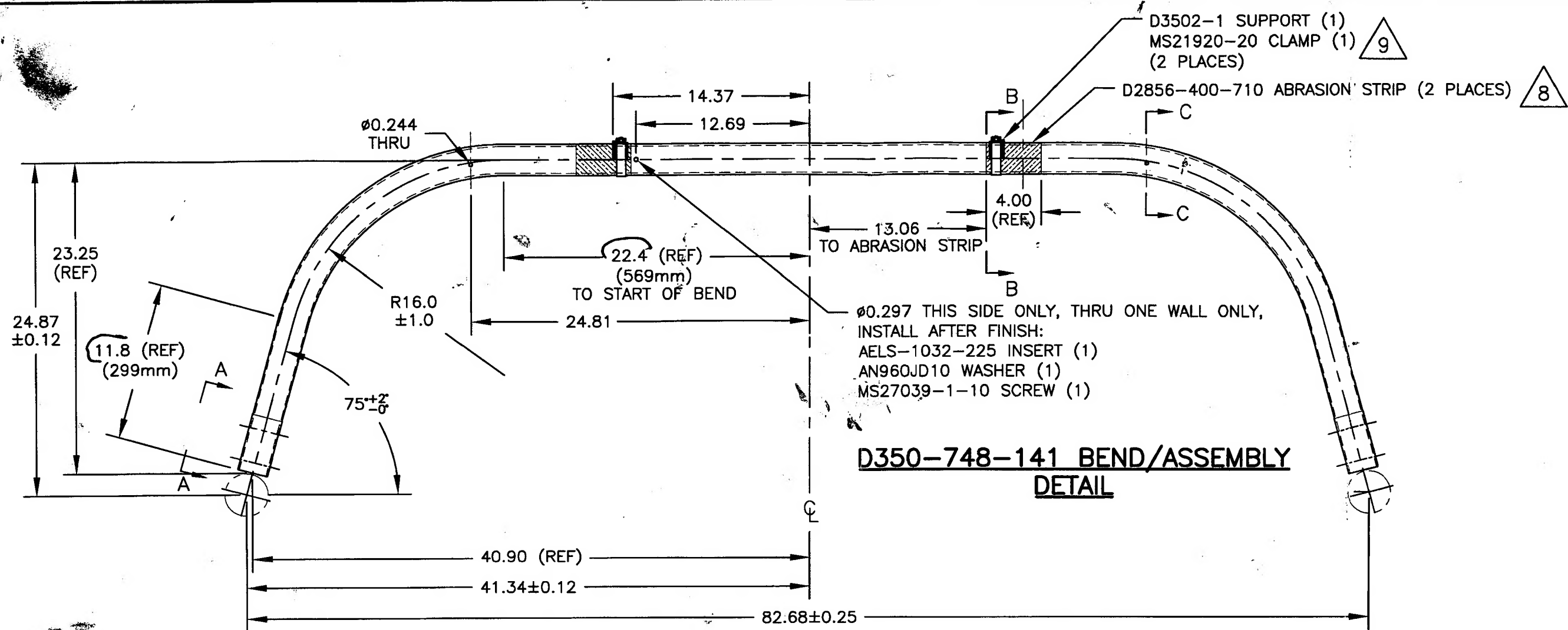
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

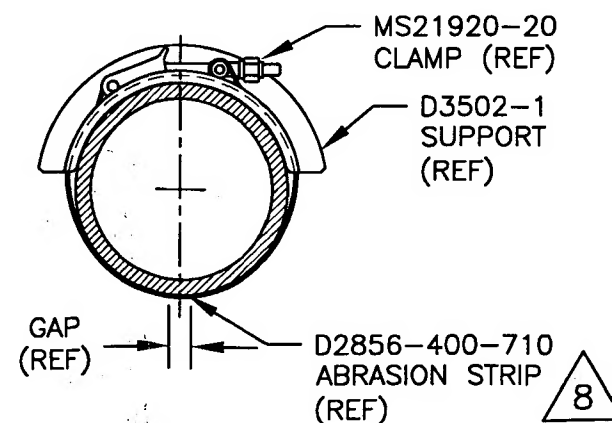
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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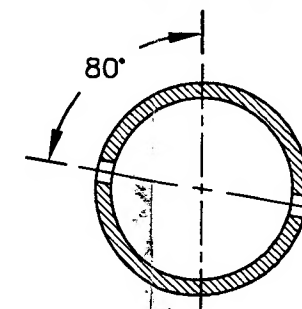
**NOTE:** Date & initial all entries



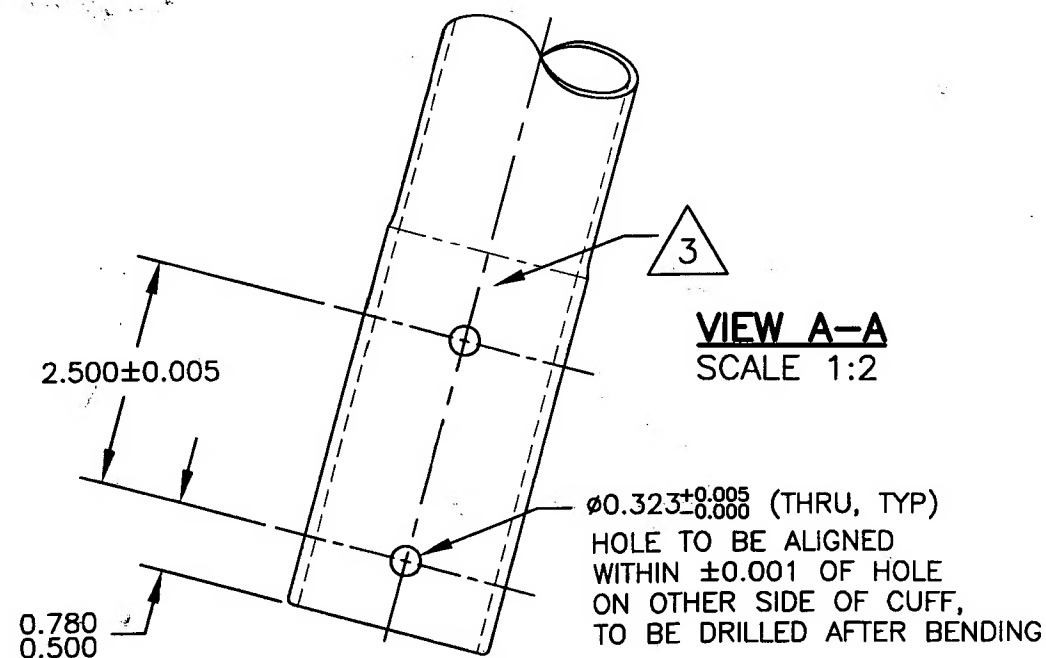
**SECTION B-B**  
SCALE 1:2



**SECTION C-C**  
SCALE 1:2



**VIEW A-A**  
SCALE 1:2



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 38490

**UNDER REVIEW!**  
07.02.16  
CUFF BEND REDUCED  
07.07.22

**RELEASED**  
06.10.31

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DRAWN BY

**DART**

**DART AEROSPACE LTD.**  
HAWKESBURY, ONTARIO, CANADA

CHECKED

APPROVED

DRAWING NO.  
D350-748-141

REV. D

DATE

TITLE

SCALE

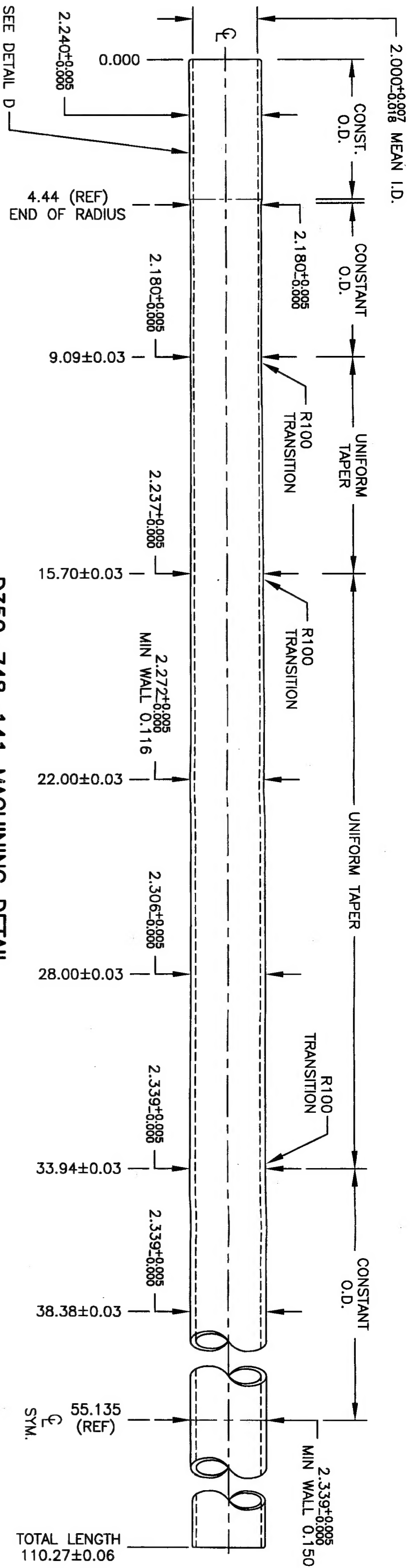
06.10.31

CROSSTUBE (AS 350/355 HI FWD)

1:8

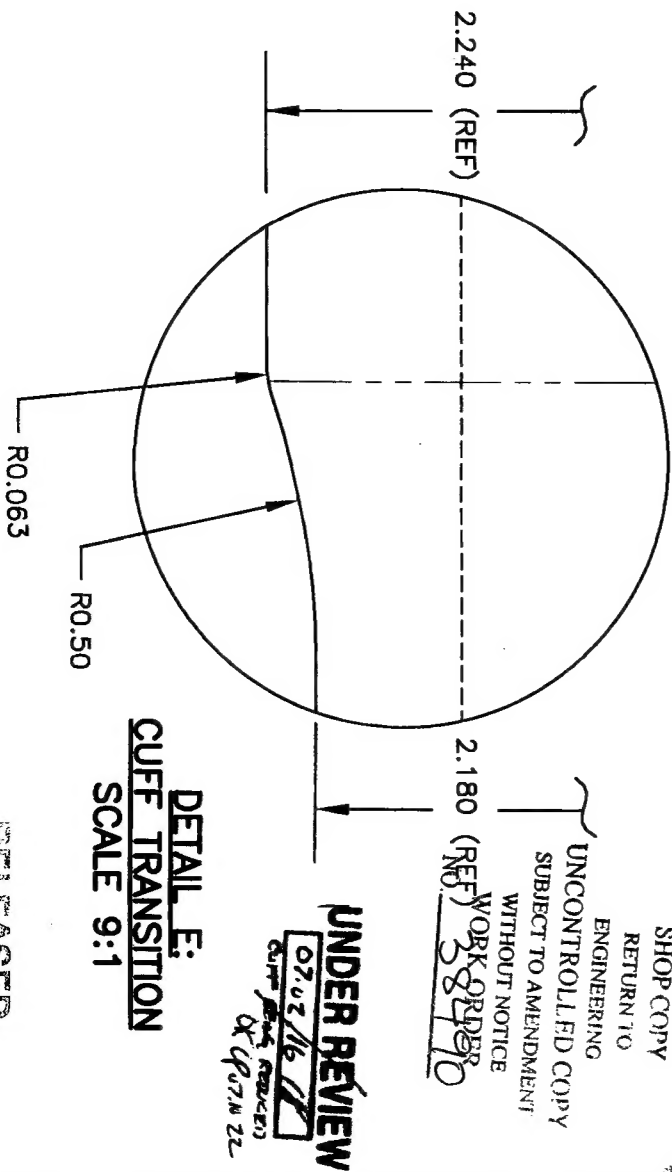
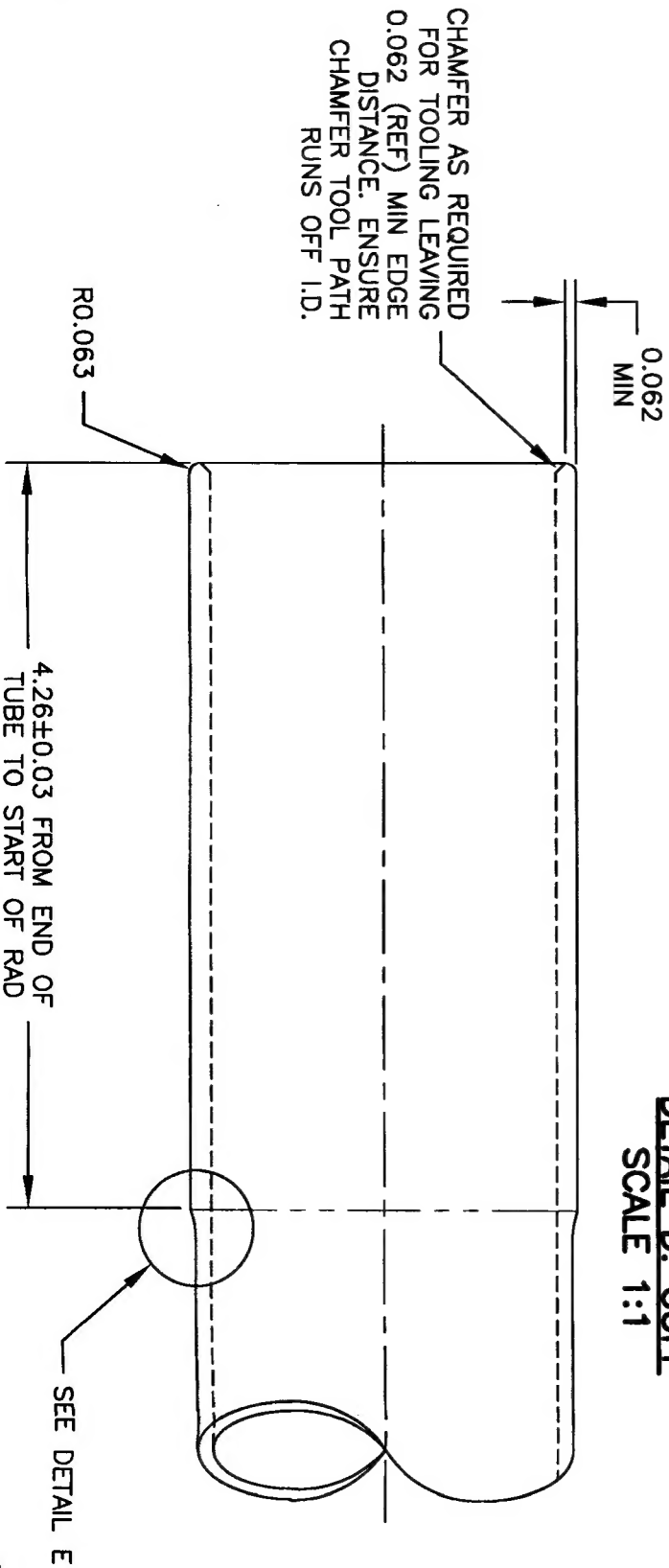
SHEET 2 OF 3





### D350-748-141 MACHINING DETAIL

### DETAIL D: CUFF SCALE 1:1



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DATE		06.10.31		DRAWING NO.		D350-748-141	
TITLE		CROSSTUBE (AS 350/355 HI FWD)		REV. D		SHEET 3 OF 3	
SCALE		1:3					



**CERTIFICATE OF  
CONFORMANCE**

**CADORATH PLATING CO. LTD.  
2150 LOGAN AVENUE  
WINNIPEG, MANITOBA R2J-0J1**

**DATE: Oct-17-2008**

**CONSIGNED TO: Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawksbury, ON K6A 1K7**

**W/O #: 80591**

**INVOICE #: 41382**

**CONTRACT OR  
PURCHASE ORDER # 00007326**

**DESCRIPTION: KID**

**QTY 1**

**P/N # d350-748-101**

**S/N # B38490**

**MPI IAW ASTM-E-1444. CADMIUM PLATE IAW AMS-QQ-P-416B  
TYPE 2 CLASS 2. BAKE HEAT CHARTS #9725 AND 9741.**

*S*  
*08/10/02*

**CERTIFICATE: I certify that the items indicated here on have  
been inspected and tested and conform to all specifications  
and requirements detailed on the contract or purchase order.**

**Approved Inspector:** \_\_\_\_\_